

APPLICANT(S): TRIBELSKY, Zamir et al.

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AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled. The following list of claims is intended to replace all prior versions or listings of claims in the application:

Listing of the Claims

1. (Currently Amended) An irradiation A liquid disinfection device comprising:

at least one reactor a pipeline to hold flowing liquid to be treated for the treatment with light radiation, the reactor pipeline comprising a tube or a vessel walls made of light-transparent material and surrounded by air, and having a fluid inlet[[],] and a fluid outlet; and at least one opening or window adapted for the transmission of light into the pipeline tube, wherein the liquid flows in a space between the window and the pipeline; and a light source external to said pipeline to generate light to be transmitted through the window into the flowing liquid within the pipeline; tube, said light source including a light generator and a reflector to reflect light generated by said light source generator onto through said window into the flowing liquid within the pipeline, at angles of a predefined angle range wherein the reflected light strikes the walls of the pipeline at angles of incidence greater than a critical angle for total internal reflection to enable the total internal reflection.
2. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the tube or the vessel is walls of the pipeline are made of quartz.
3. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the tube or the vessel pipeline is positioned inside a protective sleeve with an air gap in between.
4. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the window is provided with an optical filter to block light of a predetermined wavelength spectrum from entering the pipeline reactor.

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5. (Currently Amended) The liquid disinfection irradiation device of claim 1, further comprising one or more light detectors to detect light energy at one or more predetermined regions of the pipeline tube-or-the vessel, and a controller to control one or more disinfection-related parameters of said disinfection device based on the detected light energy.
6. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein said reactor further comprises at least one additional pipeline tube-or-vessel made of light-transparent material wherein the pipelines transparent tubes are of descending diameters and are positioned one inside another with gaps in between, about the same longitudinal axis, forming a multi core reactor.
7. (Cancelled)
8. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the fluid outlet is formed as a filling nozzle in a liquid filling apparatus.
9. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the fluid outlet is formed as a water launcher in a washing apparatus.
10. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein said window has a surface area equal to or bigger than an inner diameter of said tube pipeline between said inlet and said outlet.
11. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein said window is located such that said light enters said pipeline tube-or-vessel at a direction corresponding to a flow direction of said fluid liquid between said inlet and said outlet.
12. (Currently Amended) In a domestic water supply system, the liquid disinfection irradiation device according to claim 1, further comprising a faucet adapted to be activated by a domestic user, in liquid communication with [[a]] the fluid outlet of the reactor.

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13. (Cancelled)

14. (Currently Amended) The liquid disinfection irradiation device of claim 1, wherein the at-least-one light source generator is selected from the group consisting of a microwave-excited-electrodeless UV plasma lamp, a UV laser, a pulsed UV lamp, and a mercury lamp.

15. (Currently Amended) A method Method for irradiating fluids disinfecting liquids, the method comprising:

accommodating fluid flowing liquid to be disinfected in a reactor pipeline comprising the walls of which are made of a light-transparent material, and the surrounding outside the wall is of a refractive index lower than that of the wall liquid;

positioning a light-transparent window externally to the pipeline leaving a space between said window and said pipeline for liquid to flow;

generating light radiation externally to said reactor pipeline to be transmitted through said window into the flowing liquid within the pipeline; and

reflecting, with a reflector, said light radiation into said reactor liquid flowing through the pipeline such that light is transmitted through the window into the liquid fluid, and such that a major portion of said light strikes the walls of the pipeline at angles of incidence greater than a critical angle for total internal reflection to enable the total internal reflection which leaves the fluid through its boundaries with the transparent wall is reflected back into the fluid or remains to shine along the transparent wall.

16. (Cancelled)

17. (Currently Amended) The method Method for irradiating fluids according to claim 15, wherein the transparent material is quartz.

18. (Currently Amended) The method Method for irradiating fluids according to claim 15, wherein the accommodated fluid liquid is water or other liquid transparent to certain wave lengths of the light radiation.

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19. (Currently Amended) The method Method-for-irradiating-fluids according to claim 18 comprising launching the water from the outlet to form a free flow water jet with light radiation locked in total internal reflection within the jet.
20. (Currently Amended) The method Method-for-irradiating-fluids according to claim 19, further comprising washing a surface or a container with the free flow jet.
21. (Currently Amended I) The method Method-for-irradiating-fluids according to claim 19, further comprising filling a bottle or a container with the free flow jet.
22. (Currently Amended) The method Method-for-irradiating-fluids according to claim 21 comprising simultaneously evacuating the air rejected from the container by the liquid being filled, and suctioning it into another device a-second reactor or into a second flow channel in the same device reactor in which the liquid is irradiated, for irradiating the air.
23. (Currently Amended) The method Method-for-irradiating-fluids according to claim 19, further comprising dissolving into the liquid oxidizing agents, air, or gas, in order to enhance the disinfection process.
24. (Currently Amended) The method Method-for-irradiating-fluids according to claim 21, further comprising dry-disinfecting the containers to be filled by means of quartz rod inserted into the container opening and irradiating it with UV emitted from the rod.